# (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization International Bureau



# 

(43) International Publication Date 30 September 2004 (30.09.2004)

**PCT** 

(10) International Publication Number WO 2004/083594 A3

(51) International Patent Classification<sup>7</sup>: 43/10

E21B 23/00,

(21) International Application Number:

PCT/US2004/008171

(22) International Filing Date: 15 March 2004 (15.03.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/454,896

14 March 2003 (14.03.2003) US

(71) Applicant (for all designated States except US): ENVENTURE GLOBAL TECHNOLOGY [US/US]; 16200 A Park Row, Houston, TX 77084 (US).

(72) Inventors; and

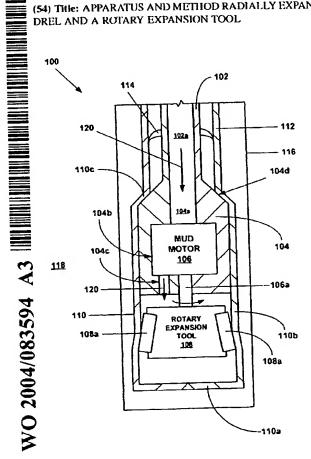
(75) Inventors/Applicants (for US only): SHUSTER, Mark

[US/US]; 19115 Prospect Ridge Lane, Houston, TX 77094 (US). COSTA, Scott [US/US]; 2011 Willow Point, Kingwood, TX 77330 (US).

- (74) Agent: MATTINGLY, Todd; Haynes and Boone, LLP, 901 Main Street, Suite 3100, Dallas, TX 75202 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, C11, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, FG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: APPARATUS AND METHOD RADIALLY EXPANDING A WELLBORE CASING USING AN EXPANSION MANDREL AND A ROTARY EXPANSION TOOL



(57) Abstract: An apparatus and method for radially expanding a wellbore casing (112) using an expansion mandrel (104) and a rotary expansion tool (108).

BEST AVAILABLE COF

#### 

Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declaration under Rule 4.17:

- of inventorship (Rule 4.17(iv)) for US only

### Published:

- with international search report
- (88) Date of publication of the international search report: 19 May 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/08171

A. CLASSIFICATION OF SUBJECT MATTER				
IPC(7) : E21B 23/00, 43/10 US CL : 166/380, 382, 207				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) U.S.: 166/380, 382, 207, 206				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category •	Citation of document, with indication, where ap	propriate, of the relevant passages	Relevant to claim No.	
Х	US 3,785,193 A (KINLEY et al) 15 January 1974 (15	/01/1974), Figures 1-3.	2, 4-6 and 8-15	
х	US 2.627,891 A (CLARK) 10 February 1953 (10/02/1953), Figures 1 and 4.		2, 4-6 and 8-15	
A, P	US 6,543.552 A (METCALFE et al) 08 April 2003 (08/04/2003), Figures 1-7.		1-15	
Α	US 3,818,734 A (BATEMAN) 25 June 1974 (25/06/1974), see Figure 1.		1-15	
А	US 2003/0024711 A1 (SIMPSON et al) 06 February 2003 (06/02/2003), Figure 2		1-15	
Further documents are listed in the continuation of Box C. See patent family annex.				
Special categories of cited documents:     IT later document published after the international filing date or date and not in conflict with the application but cited to under				
	t defining the general state of the art which is not considered to be of relevance	principle or theory underlying the inve	ention	
"X" document of pa "E" carrier application or patent published on or after the international filing date considered nov			nent of particular relevance; the claimed invention cannot be leved novel or cannot be considered to involve an inventive step the document is taken alone	
"O" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  "O" document referring to an oral disclosure, use, exhibition or other means		"Y"  document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art		
		· · · · · · · · · · · · · · · · · · ·		
"P" document published prior to the international filing date but later than the "&" document member of the same patent family priority date claimed				
Date of the actual completion of the international search		Date of mailing of the international search report  16 FEB 2005		
	005 (11.01.2005) ailing address of the ISA/US	Authorized officer		
Ma Co P.C Ala	uil Stop PCT, Attn: ISA/US mmissioner for Patents D Box 1450 exandria, Virginia 22313-1450	Hoang Dang Polyte Telephone No. 703-308-2168	for	
Facsimile No. (703) 305-3230				

Form PCT/ISA/210 (second sheet) (January 2004)